WE CLAIM:

CLAIMS

1. An optical interconnect for a fiber optic system, comprising:

an optoelectronic device; and

a penetrator made of a suitable optically transmissive material optically coupled to the optoelectronic device and configured for insertion along the length of an optical fiber for transferring light between the optical fiber and the optoelectronic device.

2. The interconnect of Claim 1 wherein the penetrator has a pyramidal shape.

3. The interconnect of Claim 1 wherein the penetrator has a conical shape.

4. The interconnect of Claim 1 wherein the penetrator is etched into the substrate of the optoelectronic device.

5. The interconnect of Claim 1 wherein the optoelectronic device is selected from the group consisting of a top emitting vertical cavity surface emitting laser (VCSEL) and a bottom emitting VCSEL.

6. The interconnect of Claim 1 wherein the penetrator has at least one wall coated with a material that minimizes reflection of light back into the optoelectronic device.

7. The interconnect of Claim 1 wherein the penetrator has at least one wall coated with a material that facilitates coupling of light from the optoelectronic device to the optical fiber.

8. The interconnect of Claim 1 and further comprising an optical fiber having the penetrator pierced therein to optically couple the optoelectronic device and the optical fiber.

9. The interconnect of Claim 8 and further comprising an encapsulation layer at least partially surrounding the optoelectronic device, penetrator and/or optical fiber.

10. The interconnect of Claim 1 and further comprising a plastic optical fiber, and wherein the penetrator is inserted along the length of the plastic optical fiber at least halfway across a diameter of the optical fiber.

11. An parallel optical interconnect for a fiber optic system, comprising:

a plurality of optoelectronic devices arranged in a linear array; and

a plurality of penetrators each made of a suitable optically transmissive material and optically coupled to a corresponding one of the optoelectronic devices and configured for insertion along the length of a corresponding plastic optical fiber of a side-by-side array of a plurality of plastic optical fibers for transferring light between the optical fibers and the corresponding optoelectronic devices.

12. The interconnect of Claim 11 wherein each penetrator has a pyramidal shape.

13. The interconnect of Claim 11 wherein each penetrator has a conical shape.

14. The interconnect of Claim 1 wherein each penetrator is etched into a substrate of a corresponding optoelectronic device.

15. The interconnect of Claim 14 wherein each optoelectronic device is selected from the group consisting of a top emitting vertical cavity surface emitting laser (VCSEL) and a bottom emitting VCSEL.

16. The interconnect of Claim 11 wherein each penetrator has at least one wall coated with a material that minimizes reflection of light back into the corresponding optoelectronic device.

17. The interconnect of Claim 11 wherein each penetrator has at least one wall coated with a material that facilitates coupling of light from the optoelectronic device to the corresponding optical fiber.

18. The interconnect of Claim 11 and further comprising a plurality of optical fibers each having a corresponding one of the penetrators pierced therein to optically couple each optoelectronic device to its corresponding optical fiber.

19. The interconnect of Claim 18 and further comprising an encapsulation layer at least partially surrounding the optoelectronic devices, penetrators and/or optical fibers.

20. The interconnect of Claim 11 wherein the optoelectronic devices are attached to a support selected from the group consisting of a common ceramic substrate, a common silicon substrate and a common integrated circuit.

21. A method of providing an optical interconnect in a fiber optic system, comprising the steps of:

providing an optoelectronic device;

providing a plastic optical fiber;

positioning a penetrator made of a suitable optically transmissive material adjacent the optoelectronic device in a manner that allows light to be transferred between the penetrator and the optoelectronic device; and

inserting the penetrator through a sidewall of the optical fiber along the length of a plastic optical fiber in a manner that allows light to be transferred between the optical fiber and the optoelectronic device through the penetrator.